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EXAMINER

CURS, NATHAN M

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Please find below and/or attached an Office communication concerning this application or proceeding.



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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 09/893,222  
Filing Date: June 27, 2001  
Appellant(s): AMES ET AL.

**MAILED**

**JUN 16 2005**

**GROUP 2600**

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Leslie J. Payne  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 3 March 2005.

**(1) *Real Party in Interest***

A statement identifying the real party in interest is contained in the brief.

**(2) *Related Appeals and Interferences***

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

**(3) *Status of Claims***

The statement of the status of the claims contained in the brief is incorrect. A correct statement of the status of the claims is as follows:

"Claims 1-8 and 13-24 are pending and stand finally rejected. Claims 9-11 were objected to as containing allowable subject matter, but were dependent on non-allowed claims. Claim 12 was objected to for being dependent on itself.

Claims 1, 2, 4, 6, 17-20, and 23 are finally rejected under 35 U.S.C. §102(b) as being anticipated by Reisenfeld (US Patent No. 4887280). Claims 3 and 24 are rejected under 35 U.S.C. §103(a) as being unpatentable over Reisenfeld (US Patent No. 4887280). Claims 5 and 21 are rejected under 35 U.S.C. §103(a) as being unpatentable over Reisenfeld (US Patent No. 4887280) in view of Gabara (US Patent No. 6307443). Claims 7, 8, and 22 are rejected under 35 U.S.C. §103(a) as being unpatentable over Reisenfeld (US Patent No. 4887280) in view of Torgow et al. ("Bandpass Filters with Steep Skirt Selectivity"; Torgow et al.; PTGMTT

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International Symposium Digest, 1964, Vol. 64, Issue 1, May 1964, Pages 22-26). Claims 13-16 are rejected under 35 U.S.C. §103(a) as being unpatentable over Aronson et al. (US published patent application no. 09/777917) in view of Reisenfeld (US Patent No. 4887280), and further in view of Doh et al. (US Patent No. 6684033)."

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Invention**

The summary of invention contained in the brief is correct.

**(6) Issues**

The appellant's statement of the issues in the brief is correct.

**(7) Grouping of Claims**

The rejection of claims 1, 2, 4, 6, 17-20 and 23 stand or fall together because appellant's brief does not include a statement that this grouping of claims does not stand or fall together and reasons in support thereof. See 37 CFR 1.192(c)(7).

The rejection of claims 3 and 24 stand or fall together because appellant's brief does not include a statement that this grouping of claims does not stand or fall together and reasons in support thereof. See 37 CFR 1.192(c)(7).

The rejection of claims 5 and 21 stand or fall together because appellant's brief does not include a statement that this grouping of claims does not stand or fall together and reasons in support thereof. See 37 CFR 1.192(c)(7).

The rejection of claims 7, 8 and 22 stand or fall together because appellant's brief does not include a statement that this grouping of claims does not stand or fall together and reasons in support thereof. See 37 CFR 1.192(c)(7).

The rejection of claims 13-16 stand or fall together because appellant's brief does not include a statement that this grouping of claims does not stand or fall together and reasons in support thereof. See 37 CFR 1.192(c)(7).

**(8) Claims Appealed**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(9) Prior Art of Record**

<b>4887280</b>	<b>Reisenfeld</b>	<b>12-1989</b>
<b>6684033</b>	<b>Doh et al.</b>	<b>01-2004</b>
<b>2002/0149821 A1</b>	<b>Aronson et al.</b>	<b>10-2002</b>
<b>6307443</b>	<b>Gabara</b>	<b>10-2001</b>

**"Bandpass Filters with Steep Skirt Selectivity"; Torgow et al., PTGMTT International Symposium Digest, 1964, Vol. 64, 1 Issue 1, May 1964, Pages 22-26.**

**(10) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 4, 6, 17-20, and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Reisenfeld (US Patent No. 4887280).

Regarding claim 1, Reisenfeld discloses a data rate detector, comprising: an input interface to receive a digital signal having a data rate that is one of at least two known data rates (fig. 1, element 64 and col. 5, lines 4-26 and col. 1, lines 45-58 and col. 4, lines 3-9); a passing frequency-selective filter assembly coupled to the input interface and includes a first filter to pass a signal when at least a selected difference of spectral power at a first selected filtered frequency exists between the one known data rate of the signal relative to the other of the two known data rates of the filter (fig. 1, element 32 and col. 4, lines 10-40); and, a signal detector coupled to the filter to detect the passed signal and output a data rate signal related thereto (fig. 1, element 46 and col. 4, lines 37-40).

Regarding claim 2, Reisenfeld discloses the data rate detector of claim 1, wherein the preselected spectral power difference is the difference between the spectral power value of one of the two known data rates compared to a corresponding spectral power value of a null of the other of the two data rates at the preselected filtered frequency (col. 4, lines 10-40).

Regarding claim 4, Reisenfeld discloses the data rate detector of claim 1, wherein the filter assembly includes at least a second filter coupled to the input interface to receive a digital signal having a data rate that is at a third known data rate, the second filter passes a signal when at least a selected difference of spectral power at a second selected filtered frequency

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exists between the third known data rate and the two known data rates, and a second signal detector detects the passed signal of the second filter and outputs a corresponding data rate signal related thereto (col. 1, lines 45-58 and col. 4, lines 10-40).

Regarding claim 6, Reisenfeld discloses the data rate detector of claim 1 wherein the first filter is a bandpass filter (fig. 1, element 48 and col. 3, lines 55-58).

Regarding claim 17, Reisenfeld discloses a method of detecting the transmission rate of a data signal, comprising: (a) receiving the data signal having the transmission rate that could be one of at least two known data rates (col. 1, lines 45-58 and col. 4, lines 3-9); (b) utilizing a frequency-selective filter assembly including a first filter for passing signal if the incoming data rate exists at the preselected filtered frequency and comparing the signal power to the selected spectral power level (fig. 1, element 32 and col. 4, lines 10-40); and, (c) passing an output from the filter to a signal detector and outputting a data rate signal from the signal detector (fig. 1, element 46 and col. 4, lines 37-40).

Regarding claim 18, Reisenfeld discloses the method of claim 17, wherein the preselected difference is the difference in spectral power between a null of the data signal at one of the two known data rates compared to a corresponding spectral power value at the other of the two known data rates (col. 4, lines 10-40).

Regarding claim 19, Reisenfeld discloses the method of claim 18, wherein the data rate signal has an output signal indicative of the transmission rate (col. 3, lines 64-66), where the output signal from the analog comparator is inherently a voltage signal.

Regarding claim 20, Reisenfeld discloses the method of claim 19 wherein the filtering is accomplished by using a bandpass filter (fig. 1, element 48 and col. 3, lines 55-58).

Regarding claim 23, Reisenfeld discloses the method of claim 17 wherein provision is made for at least a second filter coupled to the input interface to receive a digital signal having a

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data rate that is at a third known data rate, the second filter passes a signal when at least a selected difference of spectral power at a second selected filtered frequency exists between the third known data rate and the two known data rates, and a second signal detector detects the passed signal of the second filter and outputs a corresponding data rate signal related thereto (col. 1, lines 45-58 and col. 4, lines 10-40).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reisenfeld (US Patent No. 4887280).

Regarding claim 3, Reisenfeld discloses the data rate detector of claim 1, but does not disclose that the two known data rates are integer multiples of each other. However, it would have been obvious to one of ordinary skill in the art at the time of the invention that the N known data rates detected by the system of Reisenfeld (col. 1, lines 45-58) can be integer multiples of each other, based on the detection of power at spectral nulls using band filters taught by Reisenfeld (col. 4, lines 10-40), in order to provide the benefit of a band-pass filter having utility in detecting multiple data rates.

Regarding claim 24, Reisenfeld discloses a data rate detector, comprising: an input interface to receive a signal having a data rate that is one of at least two known data rates (fig. 1, element 64 and col. 5, lines 4-26 and col. 1, lines 45-58 and col. 4, lines 3-9); a frequency-selective filter assembly including at least a first filter coupled to the input interface to pass a



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signal at one of the two known data rates when at least a preselected difference of spectral power at a preselected filtered frequency of the one known data rate exists relative to a signal having the other of the two known data rates (fig. 1, element 32 and col. 4, lines 10-40); a signal detector to detect the passed frequency and output a data rate signal (fig. 1, element 46 and col. 4, lines 37-40); at least one feedback path to the input interface to adapt to the passed frequency to optimize transmission in response to the data rate signal (fig. 1, element 46 output to element 64). Reisenfeld does disclose the possibility of a host receiving the data detector output (col. 5, lines 55-57), but does not disclose a host interface to transmit the data rate signal outside the data rate detector. However, it would have been obvious to one of ordinary skill in the art at the time of the invention that the comparator of Reisenfeld outputting the signal indicative of the data rate (fig. 1, element 46) could transmit the data rate signal outside of the data rate detector, in order to make it available for further processing by the host processor.

5. Claims 5 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reisenfeld (US Patent No. 4887280) in view of Gabara (US Patent No. 6307443).

Regarding claim 5, Reisenfeld discloses the data rate detector of claim 1, capable of detecting N data rates, but does not disclose that the first filter includes a tunable filter that includes logic to pass multiple rates by adjusting the first null of the one known data rate. Gabara discloses a tunable bandpass filter (fig. 1, element 12 and col. 2, lines 53-56), including logic for adjusting the bandpass filter (col. 3, lines 9-19), where the comparing of current and previous values and the finite state machine are indications of logic. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the tunable bandpass filter and filter control logic of Gabara for the bandpass filter of Reisenfeld, in order to provide

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the benefit of provisioning the bandpass filter accordingly for detecting any of the N data rates based on power measurements at the data rate nulls taught by Reisenfeld.

Regarding claim 21, Reisenfeld discloses the method of claim 19, but does not disclose that the bandpass filtering step is accomplished by an active filter. Gabara discloses an active tunable bandpass filter (fig. 1, element 12 and col. 2, lines 53-56), including logic for adjusting the bandpass filter (col. 3, lines 9-19), where the comparing of current and previous values and the finite state machine are indications of logic. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the active tunable bandpass filter and filter control logic of Gabara for the bandpass filter of Reisenfeld, in order to provide the benefit of provisioning the bandpass filter accordingly for detecting any of the N data rates based on power measurements at the data rate nulls taught by Reisenfeld.

6. Claims 7, 8 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reisenfeld (US Patent No. 4887280) in view Torgow et al. ("Bandpass Filters with Steep Skirt Selectivity"; Torgow et al.; PTGMTT International Symposium Digest, 1964, Vol. 64, Issue 1, May 1964, Pages 22-26).

Regarding claims 7, 8 and 22, Reisenfeld discloses the data rate detector of claims 6 and 17, but does not disclose that the bandpass filter is a passive Butterworth filter. Torgow et al. disclose a passive Butterworth bandpass filter with sharp cutoff characteristics (page 22, paragraph 2). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a passive Butterworth bandpass filter as taught by Torgow et al., for the bandpass filter of Reisenfeld, to achieve sharp cutoff characteristics.

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7. Claims 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aronson et al. (US Published Patent Application No. 09/777917) in view of Reisenfeld (US Patent No. 4887280), and further in view of Doh et al. (US Patent No. 6684033).

Regarding claim 13, Aronson et al. disclose an optical transceiver, comprising: an optical receiver having a photodetector to receive an optical input (fig. 2, element 102, abstract and paragraph 0026); a post amplifier connected to the signal rate detector and the optical receiver (fig. 2, element 104, and paragraph 0026); and a host interface connected to couple the output of the post amplifier and a data rate signal to a host system (fig. 2, element 104 and host implied to the left of fig. 2 as described paragraph 28). Aronson et al. disclose the host providing a signal indicative of the data rate to the transceiver (paragraph 0045), but do not disclose the transceiver having circuitry to detect the data rate of the received signal. Reisenfeld discloses a frequency-selective filter assembly and signal rate detector that detects the data rate of the received signal and outputs a signal indicative of the data rate, the assembly including a first filter to pass a signal when at least a selected difference of spectral power at a first selected filtered frequency exists between one known data rate relative to the other of two known data rates (col. 1, lines 45-58 and col. 4, lines 10-40). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the frequency-selective filter assembly and signal rate detector of Reisenfeld in the system of Aronson et al., in order to provide the benefit of detecting the data rate of the actual received signal, as taught by Reisenfeld, instead of depending on the host to provide the expected data rate. Aronson et al. in view of Reisenfeld do not disclose a low noise transimpedance amplifier to generate an output electrical signal in response to the received signal. Doh et al. disclose an optical receiver with a photodiode followed by a low noise transimpedance amplifier for amplifying the signal from the photodiode before further processing (fig. 3, element 120 and col. 4, lines 35-40). It would have been

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obvious to one of ordinary skill in the art at the time of the invention to use a low noise transimpedance amplifier following the photodiode of Aronson et al., to amplify the level of the signal before further processing without adding significant noise, as taught by Doh et al.

Regarding claim 14, Aronson et al. in view of Reisenfeld and further in view of Doh et al. disclose the optical transceiver of claim 13, further comprising: (a) an ac modulator to receive host input through the host interface and generate an electrical output (Aronson et al.: paragraph 0032); and (b) an optical transmitter to receive the electrical output of the ac modulator and in response thereto generate an optical output (Aronson et al.: fig. 2, element 103, abstract and paragraph 0026).

Regarding claim 15, Aronson et al. in view of Reisenfeld and further in view of Doh et al. disclose the optical transceiver of claim 14, but do not disclose that the optical output is at the rate of transmission of the optical input. However, it would have been obvious to one of ordinary skill in the art at the time of the invention that the input and output of the transceiver of Aronson et al. in view of Reisenfeld and further in view of Doh et al. would have the same transmission rate, in order to be able to both transmit and receive signals of a specific type.

Regarding claim 16, Aronson et al. in view of Reisenfeld and further in view of Doh et al. disclose the optical transceiver of claim 14, wherein the optical transmitter is a laser (Aronson et al.: fig. 2, element 103, abstract and paragraph 0026).

## **(11) Response to Argument**

### **Issue 1:**

Regarding claims 1 and 17 and their dependent claims, the appellant argues that Reisenfeld does not teach or suggest the claimed "input interface to receive a digital signal having a data rate that is one of at least two known data rates", specifically, that the "symbol

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timing loop 64" from the citation made by the examiner (Reisenfeld: fig. 1, element 64 and col.

5, lines 4-26 and col. 1, lines 45-58 and col. 4, lines 3-39) is not the claimed "input interface".

However, Reisenfeld discloses in the citation of col. 5, lines 4-26,

*"For detection of D.sub.I and D.sub.Q, symbol timing must be recovered from S(t) by the symbol loop 64. The symbol timing loop 64 locks on to the symbol rate and provides the timing signal to the detection filters 62 and 63. An illustrative implementation of an adaptive symbol timing loop 64 is shown in FIG. 6. The symbol timing loop 64 includes dual differentiators 76 and 78 which detect the edges of the input pulses and provide corresponding positive and negative pulses representative of the symbol transitions",*

and in the citation of col. 1, lines 45-58,

*"The need illustrated by the related art is addressed by the multiple data rate detector of the present invention which examines the power spectral density of the received signal and determines whether the signal is within one of N known data rate ranges. The receiver parameters may then be optimized on the basis of the data rate range determination.*

*The invention includes a first filter, with a first passband and a second filter having a second distinct passband. First and second power detectors are provided for detecting the power associated with the output of the first and second filters. The outputs of the power detectors are compared to yield a signal indicative of the data rate."*

A signal fed into a circuit at an electrical link connecting two or more pieces of equipment together meets the definition of "input interface" (see the attached definitions of "input" and "interface" from Newton's Telecom Dictionary, 19<sup>th</sup> Edition). In Reisenfeld fig. 1, element 64 comprises an electrical link having a signal being fed into it from another piece of equipment, and connects two or more pieces of equipment, as evidenced by the linking lines and directional arrows associated with element 64, and is therefore an input interface by definition. Further, the input interface of Reisenfeld receives a *digital* signal because data in the form of numerical digits meets the definition of "digital" (see attached definition of "digital" from Merriam-Webster's Collegiate Dictionary, 10<sup>th</sup> Edition). The above disclosure by Reisenfeld, which describes locking on to the symbol rate of the input signal, where a symbol is a pulse with edges, teaches that each symbol of the input signal is data arriving in time in the form of a digit.

The appellant also argues that the claimed input interface of claim 1 "does not require the inphase and quadrature data bits for subsequent analyses of the data rate of the received signal  $S(t)$ ". However, lacking any criticality, eliminating the use of inphase and quadrature data bits from Reisenfeld would not make the claimed invention patentable over Reisenfeld. The received signal of Reisenfeld meets the limitation of a signal having a data rate, regardless of the use of inphase and quadrature data bits. The appellant also argues that the symbol time loop "does not function to receive the signal of 'one of two known data rates'". However, each input signal having a symbol rate is a signal of one of two known data rates, because of the disclosure in the citation of col. 5, lines 4-26,

*"The channels 88 and 90 are substantially identical. Each channel 88 or 90 includes a bandpass filter 92 or 94 which has a center frequency at one of the symbol rates  $R_{sub.1}$  or  $R_{sub.2}$  respectively",*

where the mention of two symbol rate possibilities  $R_{sub.1}$  and  $R_{sub.2}$  is a disclosure of two known rates. Further, the input signal to the detector is a data signal with N known data rates where each input to the symbol timing loop, derived from the input to the detector, has digital symbols, as disclosed in the citations and as described above. Therefore the symbols of each input to the symbol timing loop indicate the data of the input signal.

The appellant observes that the examiner has viewed Reisenfeld's "second channel" as reading on the "passing frequency-selective filter assembly". The examiner affirms this observation. In this argument, the appellant only provides a description of the second channel of Reisenfeld, followed by the statement, "the second channel 32 does not function to behave as 'a passing frequency-selective filter assembly coupled to the input interface and includes a first filter to pass a signal when at least a selected difference of spectral power at a first selected filtered frequency exists between the one known data rate of the signal relative to the other of the two known data rates of the filter'. Accordingly, there is not anticipation within the meaning of 35

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USC 102.” The appellant seems to be arguing that Reisenfeld does not disclose the exact wording of the claim language, which is not a persuasive argument because claims are given their broadest reasonable interpretation during examination. Therefore, finding the exact wording of the claim in the reference is not required for the reference to anticipate the claim. However, for clarity, the examiner’s position regarding the rejection of this limitation is as follows (referring to Reisenfeld fig. 1, element 32 and col. 4, lines 10-40). Reisenfeld reads on “a passing frequency-selective filter assembly” including “a first filter to pass a signal” because Reisenfeld fig. 1, element 32 includes a filter (each of elements 48 and 50) which passes a signal, as disclosed in the citation of col. 4, lines 10-40,

*“When the filters operate on a received signal  $S(t)$  having a data rate of  $R_{sub.1}$  or  $R_{sub.2}$  the data rate is determined by comparing the output power of the low pass filters 34 and 36 to that of the bandpass filters 48 and 50”,*

where this band-pass filter operating on a received signal and having a band-pass filter output indicates a first filter, within an assembly, passing a band (i.e. a group of selected frequencies) of the signal. Further, the assembly is coupled to the input interface as indicated by the connecting lines and arrow from the input interface to the assembly in Reisenfeld fig. 1. Further, the claim limitation “when at least a selected difference of spectral power at a first selected filtered frequency exists between the one known data rate of the signal relative to the other of the two known data rates of the filter”, **does not** mean that the filter passes a signal conditionally, i.e. that under one condition the filter passes a signal and under another condition the filter does not pass a signal, because this interpretation is not supported by the specification (specifically, the notion of an individual band-pass filter conditionally passing a signal, e.g. a switched filter, is not supported by the specification). As shown in the fig. 3 of the application and figs 4(a) and 4(b) of Reisenfeld, the spectral power of two signals of different data rates will inherently have a difference in spectral power at a null of one of the rates. Therefore, the claim language “when

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at least a selected difference of spectral power at a first selected filtered frequency exists between the one known data rate of the signal relative to the other of the two known data rates of the filter" is non-limiting on the filter passing a signal, because the filter always passes a signal it receives, regardless of what part of the signal spectrum is filtered.

The appellant's further argument that an obviousness rejection would be based on hindsight reasoning is not applicable since the rejections are proper under 35 USC 102.

The appellant also argues that Reisenfeld (col. 4, lines 10-40) does not expressly teach that the "preselected spectral power difference is the difference between the spectral power values of one of the two known data rates compared to a corresponding spectral power value of a null of the other of the two data rates at the preselected filtered frequency". However, the difference between the R.sub.1 spectral power values of one of the data rates, compared to the R.sub.1 spectral power value of the other data rate, is shown in figs. 4(a) and 4(b) of Reisenfeld. The "preselected" spectral power difference is therefore an inherent result of the two preselected data rates at R.sub.1. The "preselected" filtered frequency is an inherent result of the band-pass filter frequency being preselected, which is disclosed by Reisenfeld in citation col. 4, lines 10-40,

*"The power spectral density of the transfer function  $H_{\text{sub.LPF}}(f)$  of the low pass filters 34 and 36 and the power spectral density of the transfer function  $H_{\text{sub.BPF}}(f)$  of the bandpass filters 48 and 50 are shown in FIG. 4(c). Note that the transfer function of the bandpass filters is centered around -R.sub.1 and +R.sub.1",*

where each bandpass filter is preselectedly centered around frequency R.sub.1.

## **Issue 2:**

Regarding claims 3 and 24, the appellant argues that the rejection is based on hindsight because there is not suggestion or motivation by Reisenfeld to modify its own construction to perform functions it does not teach or suggest, and that Reisenfeld compares low passed and



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bandpasses representation of the same signal, not different signals. As best understood by the examiner, the appellant's argument against Reisenfeld means that because the Reisenfeld low pass filters and band pass filters are ultimately filtering the "same" input signal  $S(t)$  (see Reisenfeld fig. 1), that Reisenfeld doesn't meet the limitation of the claim. However, this argument is not persuasive because neither of the claims in question recites the limitation that the appellant is arguing as missing from Reisenfeld, i.e. that the filtered representation of one data rate is directly compared to the filtered representation of the other data rate. The claim language explicitly states that the received signal is "a signal having a data rate that is one of at least two known data rates". The claim language "a preselected difference of spectral power at a preselected filter frequency of the one known data rate... relative to a signal having the other of the two known data rates" **does not** mean that the power levels of two different, simultaneously present, data rates are being compared.

The appellant further argues that "there is inadequate motivation to suggest two known data rates are integer multiples of each other in Reisenfeld". However, the motivation for the data rates obviously being integer multiples of each other is based on Reisenfeld disclosing determining a data rate based on comparing levels at a first null of a first rate and disclosing the second and higher nulls of the first rate occurring at approximately integer multiples of the first null (see spectrum shapes in Reisenfeld. fig. 4(a) and 4(c)). It is very well known in the art that in the spectrum of a data rate, second and higher nulls are integer multiples of the first null. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that one of the  $N$  data rates disclosed by Reisenfeld would be an integer multiple of the first data rate, since similarly to the example second data rate in fig. 4(b) of Reisenfeld, the spectral power of one of the  $N$  data rates measured at  $R_{sub.1}$  would be substantially greater

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than the spectral power of the first data rate measured at R.sub.1, as a result of the first null of the second rate being at least two times R.sub.1.

**Issue 3:**

Regarding claims 5 and 21, the appellant argues that the combination of Reisenfeld and Gabara is based on hindsight reasoning because the proposed combination would go against the direct teachings of the Reisenfeld patent. The appellant's hindsight argument is based on the appellant assuming the proposal to combine is based on Gabara teaching adjusting the first null of the unknown data rate in channel 32 of Reisenfeld. The appellant then argues that channel 32 of Reisenfeld has nothing to do with adjusting the first null. However, the motivation to combine is not based on Gabara teaching adjusting the first null. The motivation to combine is based on Reisenfeld teaching of detecting the rate from among N different possible rates; for example, as disclosed in col. 1, lines 45-58,

"The need illustrated by the related art is addressed by the multiple data rate detector of the present invention which examines the power spectral density of the received signal and determines whether the signal is within one of N known data rate ranges. The receiver parameters may then be optimized on the basis of the data rate range determination.

The invention includes a first filter, with a first passband and a second filter having a second distinct passband. First and second power detectors are provided for detecting the power associated with the output of the first and second filters. The outputs of the power detectors are compared to yield a signal indicative of the data rate."

Although Reisenfeld discloses several details of detecting a data rate from among only two data rates (using bandpass filters set to R.sub.1), the suggestion of detecting data rates from among N different rates provides motivation to modify the two-rate invention to handle the N different data rates. Considering the tunable bandpass filter of Gabara, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the bandpass filters of Reisenfeld to be tunable, to provide the benefit of provisioning the bandpass filter for

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detecting any of the N data rates (i.e. allowing the bandpass filters to be set to something other than R.sub.1).

**Issue 4:**

The appellant does not present separate arguments for claims 7, 8 and 22; therefore, the examiner's response to this issue is the same as for issue 1, which covers the corresponding independent claims 1 and 17.

**Issue 5:**

Regarding claims 13-16, the appellant argues that Reisenfeld does not teach the claimed data rate detector, which argument has been answered by the Examiner above. The appellant also argues that Reisenfeld does not suggest that it would have been obvious to place the data rate detector in an optical transceiver or that the Reisenfeld system could be used in an optical transceiver. The appellant also argues that Aronson doesn't provide motivation to combine either.

However, the motivation to combine is provided by Aronson teaching electrical components of an optical receiver in fig. 2 and paragraph 0026,

*A transceiver 100 based on the present invention is shown in FIGS. 2 and 3. The transceiver 100 contains a Receiver Optical Subassembly (ROSA) 102 and Transmitter Optical Subassembly (TOSA) 103 along with associated post-amplifier 104 and laser driver 105 integrated circuits that communicate the high speed electrical signals to the outside world. In this case, however, all other control and setup functions are implemented with a third single-chip integrated circuit 110 called the controller IC.",*

and teaching the use of the data rate by the transceiver in paragraph 0045,

*"In an alternate embodiment, another input to the controller 102, at the host interface, is a rate selection signal. In FIG. 3 the rate selection signal is input to logic 133. This host generated signal would typically be a digital signal that specifies the expected data rate of data to be received by the receiver (ROSA 102). For instance, the rate selection signal might have two values, representing high and low data rates (e.g., 2.5 Gb/s and*

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*1.25 Gb/s). The controller responds to the rate selection signal by generating control signals to set the analog receiver circuitry to a bandwidth corresponding to the value specified by the rate selection signal.”*

and Reisenfeld suggesting use of the rate detector in a receiver in col. 1, lines 45-58, as quoted above.

Both references are applicable to electrical circuits of a digitally functioning receiver, and based on Aronson's disclosure of the transceiver having to get the expected data rate information externally from the host, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Reisenfeld with Aronson to provide the benefit of detecting the data rate of the actual received signal of the Aronson transceiver, instead of depending on the host to provide the expected data rate.

The appellant also argues that Reisenfeld's method of using inphase and quadrature components and measuring them “would not appear to be operable in the Aronson optical system”. However, both systems are applicable to digital communications and Reisenfeld discloses generating the inphase and quadrature components from the received signal  $S(t)$ , therefore the combination of Aronson and Reisenfeld would not require Aronson to provide inphase and quadrature signal components. Therefore, Reisenfeld's teaching of using inphase and quadrature components is not a teaching away from Aronson.

The appellant also argues that the examiner “does not explain how why Doh's structure could be used in the Reisenfeld data detector”. However, the teaching of Doh is applicable for modifying the teaching of Aronson, not the teaching of Reisenfeld, therefore this argument is not applicable. The motivation to apply the teaching of Doh to Aronson comes from Doh's teaching of amplifying a received signal with the advantage of low-noise, as described in the rejection. Further, it is very well known in the art that received signals are amplified since they experience attenuation during transmission. The appellant also argues against Doh in that the claimed

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invention is not limited to adjusting the frequency of the VCO, as mentioned in Doh. However, this argument is not applicable because the relevant teaching from Doh is the low-noise amplifier amplifying the signal received at the photodiode, not a Doh teaching of adjusting a VCO frequency. The appellant also argues that Doh does not cure the deficiencies of the combination of Aronson and Reisenfeld; however, the combination of Aronson and Reisenfeld is proper and reads on the claims, as described above.


For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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Art Unit 2633

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